

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Mark L. LA FOREST, et al.

Application No.: 10/783,548

Confirmation No.: 7427

Filed: February 20, 2004

Art Unit: 1791

For: VERSATILE MOLD FLOW CAPABILITY IN
THE INFILTRATION OF POROUS CARBON
PREFORMS WITH
PITCH/THERMOPLASTIC/THERMOSET
RESINS

Examiner: WOLLSCHLAGER

REPLY BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is in reply to the Examiner's Answer dated December 21, 2007.

A crucial issue that controls many of the rejections in this Appeal is whether the Johnson reference is properly combined with the Wood reference.

The claims under consideration all recite processes that employ specifically described molds. The Examiner acknowledges, for instance on page 7 of the Examiner's Answer, that Wood fails to "disclose a plurality of melt channels in the top and bottom half" of his mold. This is a reference to the requirement in Appellants' process claims that a plurality of melt supply channels be disposed in the top half of the mold and a plurality of melt supply channels be disposed in the bottom half of the mold in order to operatively communicate with the annular mold cavity.

The Examiner argues on page 12 of the Examiner's Answer that Johnson makes it

obvious to modify the Wood mold “by providing a plurality of inlets *in both the top and bottom portions of the [Wood] mold* for the purpose of reducing the flow distances of Wood’s” resin or pitch material. What disclosure in Johnson refers to top and bottom portions of the mold?

The Examiner refers on page 12 of the Examiner’s Answer to lines 53-60 in column 1 of Johnson, which state that “for longer flow distances multiple inlet ports may be required.” Page 1 of the Evidence Appendix attached to the main Brief on Appeal shows Wood’s mold (Fig. 4) and Appellants’ mold (Fig. 5B). If Appellants’ mold contained “longer flow distances” than does the mold of the primary reference, it might make sense to apply the Johnson teaching in question, but the flow distances in Appellants’ mold are the same as those in Wood. Johnson therefore provides no motivation to modify the Wood mold.

The Johnson drawing (Evidence Appendix, page 2) shows that each branch of the Johnson mold has a single resin inlet port, and that all of the resin channels in Johnson have one end which is in close proximity to all of the other resin channels. The vague generic disclosure in Johnson does not make it obvious to modify the Wood mold to include *multiple bottom* inlet ports 41 and *multiple top* inlet ports 43 – which are all *remotely located* from central nozzle (16, 26) as shown in Appellants’ Figure 5B.

On page 12 of the Examiner’s Answer, the Examiner refers to a teaching relating to “rapid resin cure” in Johnson and to Wood’s “rapidly densifying resin or pitch material.” Wood’s process does provide relatively rapid densification of preforms. However, rapid resin cure is not a problem, at least in the present process, because an expressly recited parameter of Appellants’ claims is that the claimed process is carried out “at a temperature above a melting point of a resin or pitch to be transferred into the preform” and that only after the resin impregnation step do Appellants engage in “cooling the resulting resin-infiltrated or pitch-infiltrated preform to below the melting point of the resin or pitch.”

A fundamental problem with the Examiner’s rejections – in addition to the fact that the Johnson teachings are not relevant to the Wood disclosure – is that the Examiner is focusing on the configuration of a mold used in the process rather than upon the manipulative steps required by the process itself. On page 7 of the Answer, the Examiner contends that it is obvious “to have employed a plurality of gates/melt channels in the top and the bottom of the mold while practicing the method disclosed by Wood.” Appellants are not claiming practicing Wood’s

method or employing a plurality of melt channels. Appellants are claiming effecting flow of resin/pitch from channels located in the top and bottom of a mold cavity through the body of a preform to vents located in the center of and at least the top and bottom of the mold cavity, while maintaining the temperature of the resin/pitch above its melting point (so that too-rapid curing is not a problem). The Examiner has not stated a rejection of that process.


On page 13 of the Examiner's Answer, the Examiner questions the benefits of Appellants' invention. The novel mold configuration which makes the presently claimed process possible provides a system with a significant processing versatility that is not provided by the Wood technology. Appellants' novel process can be run as top fill only, bottom fill only, or top and bottom fill simultaneously, or can be used for outside diameter to inside diameter infiltration or inside diameter to outside diameter filtration, and so on. More details of the versatility of the present invention are set forth in paragraph [0021] of the specification.

It is respectfully submitted that none of the rejections of any of Appellants' process claims 7-14 and 16-18 over the Wood disclosure in view of the Johnson disclosure as stated in the Examiner's Answer is properly sustainable.

If there are any questions concerning this application, please contact Richard Gallagher (Reg. No. 28,781) at (703) 205-8008.

Dated: February 14, 2008

Respectfully submitted,

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